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## ABSTRACT OF THE DISCLOSURE

The field ground fault detector of the present invention detects a ground fault that occurs in the field circuit and in any associated circuits galvanically connected to the field. The field ground fault detector discerns the ground resistance so that it can be monitored to detect gradual degradation of the ground resistance. The detector estimates the resistance of the ground fault and the location of the ground fault. The detector is able to estimate the location of the ground fault during system operation and during periods of non-operation. The invention utilizes a low frequency square wave oscillator to permit measurement of the ground fault resistance when field voltage is not applied, to insure that there are no blind spots when the field is energized, and to provide a method for estimating the ground fault resistance. The field ground detector can differentiate between ground faults that occur on the AC side form those on the DC side of the Thyristor Bridge.